Alternatives and Justification Analyses Guide

Pipelines and Flowlines

1.0 Introduction

One of the goals of the Office of Coastal Management (OCM) is to achieve a balance between conservation of coastal resources and development of the coastal zone. Development in the coastal zone is encouraged but avoidance of unnecessary impacts to coastal resources is essential in order to protect those resources for future generations. To accomplish this goal, OCM reviews every Coastal Use Permit (CUP) application with the objective of avoiding and/or minimizing adverse impacts wherever possible. Pursuant to La. RS 49:214.27.B and C., OCM uses the Coastal Use Guidelines, found in LAC Title 43, Part I, Chapter 7, Subpart B, §701-719, to determine the type of information needed to fully evaluate a particular use and the adverse impacts that must be avoided to the maximum extent practicable. All coastal uses must be in conformance with all applicable Coastal Use Guidelines in order to receive approval from OCM.

Part of these guidelines, §701.H, charges OCM with ensuring that the public benefits of a proposed coastal use clearly outweigh any adverse impacts to public resources resulting from that use. **Public benefits** include providing goods and/or services to users that currently do not have reasonable access to such goods and/or services, increasing permanent employment opportunities and increasing public revenues. **Coastal resources** include coastal waters, wetlands, fisheries, wildlife and unique ecological/coastal features such as ridges, cheniers, salt domes, reefs, beaches and dunes. These resources provide value to the public in the form of storm and flood protection, nursery grounds for commercial and recreational fisheries, critical habitat for endangered species and improved water quality. Public resources also include existing structures and infrastructure. **Adverse impacts** are direct or indirect loss and/or negative alteration of a public resource as well as negative impact on concurrent and neighboring coastal users and include such things as increased intensity or frequency of flooding, accelerated erosion and salt-water intrusion.

Review of a proposed coastal use using the Coastal Use Guidelines includes asking questions such as:

1. Can adverse impacts from a proposed use on coastal resources and/or user groups be avoided by moving the use to an area which results in less adverse impact to coastal resources and/or users?
2. If the use cannot be moved, can demand for the proposed goods and/or services in the area to which they will be introduced be documented?
3. If a use cannot be moved and demand can be demonstrated, can the use be redesigned/reconfigured, or can different methods be used to accomplish the use, which results in less damage to coastal resources?

To answer these questions, OCM requires that the applicant provide Alternatives and Justification Analyses in sufficient detail to demonstrate a thorough consideration of the alternatives and need for the proposed activity. In an effort to recognize the differences

between small and large projects, and/or low and high coastal resource impact projects, OCM has developed a tiered approach to Analysis development. Factors such as, but not limited to, the complexity of the development, surrounding land use, type and level of resource impact and coastal use objective(s) are used to determine the range of alternatives to be considered in the Alternatives Analysis and the information and level of detail required for the Justification, Drainage and Coastal Hazard Analyses. This guide was developed to assist applicants for Coastal Use Permits with determining, in general, the type of information and level of detail needed to fully evaluate a proposed coastal use's potential impacts and benefits and therefore it's conformance with the Coastal Use Guidelines. Any combination of analyses may be required depending on the nature of the proposed coastal use and the potential adverse impacts that may occur from that use.

To fully evaluate a proposed coastal use's benefits and impacts, Alternatives and/or Justification Analyses are required during review of a use from which adverse impacts to coastal resources are, in OCM's opinion, likely to occur. The Alternatives Analysis should address several options for project siting that are compared equally for feasibility and will allow OCM to determine the least damaging feasible site for the proposed use. The Alternatives Analysis should provide documentation that clearly demonstrates that reasonable efforts were made to find less damaging sites and should provide an explanation for why each less damaging site was not feasible. The Alternatives Analysis also should address alternate site configuration, alternate methods of construction, and how adverse impacts to coastal resources will be minimized.

The Justification Analysis should include sufficient detail to clearly demonstrate demand for the proposed use and will allow OCM to determine the public need the proposed use. The Justification Analysis should explain the goods and/or services that the proposed coastal use will provide and include documentation that clearly demonstrates a public demand for, or public benefit resulting from, the proposed use. The analysis should provide enough information for OCM to determine that there is a reasonable chance that the project will be successful and not result in a situation where large scale destruction of resources is permitted for a project that fails economically, floods, causes flooding on adjacent areas or in some other way fails the public.

In general, the greater the resource or user group impacts, the more detail required for both the Alternatives and Justification Analyses. If reviewing this guide prior to submission of a JPA, the information presented herein should be taken into consideration and addressed while developing the project. In most cases, alternatives, or the lack thereof, are evident and a simple discussion of the options considered is sufficient. This information can be provided in steps 11b-c of the Joint Permit Application. If the information is not provided in or attached to the JPA, the OCM permit analyst will review the project and determine if any less damaging alternatives are evident. Additional information may be requested by the permit analyst in order to address the less damaging options he/she identified. Using the information contained in these analyses, OCM can effectively evaluate the proposed coastal use's conformance with the applicable Coastal Use Guidelines (specifically §701.F.3, 5, 7, 8, 10, 13, 16 and 19; §701.G.2 and 6; §701.H; §701.I; and all applicable Use Specific Guidelines).

Pipelines and flowlines (hereafter referred to as "lines") are linear features installed for the purpose of transporting materials from one location to another. Lines can be of any diameter and length and any type of liquid or gaseous material can be transported within them. Adverse

impacts to coastal resources should be avoided when selecting a route. If it is not possible to avoid the coastal resource(s), the method of installation which minimizes adverse impact to these resources should be utilized. If, in OCM's opinion, adverse impacts to coastal resources may occur during installation and/or operation of a line, Alternatives and Justification Analyses will be required.

This guide focuses on those aspects of a pipeline project for which options should be available: route and method of installation. The Alternatives and Justification Analyses should address both of these aspects and discuss the efforts undertaken to select the route, method of installation and work space size that result in the least possible amount of damage to coastal resources while achieving project objectives. Because options for existing line installation differ from options for new line installation, each will be presented separately.

2.0 Maintenance of Existing Lines

Maintenance of existing lines includes the installation of clamps or other leak prevention devices, replacement of all or portions of existing lines, replacement of support structures, replacement of erosion control or protection measures, replacement of warning signage and trimming of existing cleared rights-of-way. Maintenance activities that, in OCM's opinion, may result in adverse impacts to coastal resources will require a brief Alternatives and Justification Analyses. The information required is dependent on the nature of the maintenance activity and is outlined in the sections below.

2.1 Alternatives Analysis

Because maintenance activities occur on existing lines and work sites are determined by the location and type of maintenance activities required, an Alternative Sites Analysis is not required. However, since access to the site and method of repair are flexible, the Alternatives Analysis should include a discussion of the options available to accomplish the proposed activity while minimizing adverse impacts to coastal resources. Options can include different access routes to the work site(s) and different methods of completing the activity that minimize adverse impacts to the maximum extent practicable.

2.1.1 Route

The Alternatives Analysis should address alternate routes that provide access to the work site and minimize adverse impacts to coastal resources. Traveling within the existing ROW or previously cleared areas to the work site is preferred over using or clearing new access points.

2.1.2 Method

The use of less-damaging equipment such as air boats or helicopters is preferred over marsh buggy use or excavation/clearing machinery for shorter access. If less-damaging equipment cannot be used, an explanation must be provided. Trench and spoil widths should be of the minimum size required to perform the activities safely. Work spaces around the maintenance size should be minimized to only that necessary to safely store and use the required equipment and materials.

2.2 Justification Analysis

A narrative explaining the need for the proposed activities should be provided. If new access or new clearing for access is required, a statement explaining the need for the new access should be provided.

3.0 New Line Installation

New line installation includes the installation of previously non-existent lines and the lengthening of existing lines. New lines may require detailed Alternatives and Justification Analyses if, in OCM's opinion, adverse impacts to coastal resources may occur during or after construction. Alternate routes and methods of installation that minimize adverse impacts to coastal resources to the maximum extent practicable should be considered during initial project development. Documentation of these efforts should be preserved for inclusion in an Alternatives Analysis if adverse impacts to coastal resources cannot be avoided.

3.1 Route

The point of beginning (POB) and the point of ending (POE) of a line usually are somewhat fixed and relocation may not be possible; however, the route the line follows from the POB to the POE can be adjusted. Efforts to select a route that avoids impacts to coastal resources should be taken first. If avoiding coastal resources is not possible, efforts to minimize adverse impacts to coastal resources should be taken. Existing line or utility corridors should be used whenever possible. Forested wetland habitats should be avoided to the maximum extent practicable. Alternate routes can be identified by coordinating with landowners who have historical knowledge of the property and by using current aerial photography.

3.2 Method of Installation

Methods of installation include laying the line on the surface, burying the line below the surface or horizontally directionally drilling the line. The method of installation can include the use of manpower (hand labor) and/or equipment such as marsh buggies, airboats, barges, tug boats, backhoes, bulldozers, plows, jet sleds, drilling units, etc. A combination of methods is acceptable and should be considered if using more than one method would minimize adverse impacts to coastal resources. Please note that lines typically must be buried a minimum of three (3) feet below the mudline in all navigable water bodies. To view the US Army Corps of Engineers general criteria for pipeline burial within the New Orleans District, please visit http://www.mvn.usace.army.mil/ops/regulatory/Pipeline%20burial%20depth%20May%2031%202010.pdf.

3.2.1 Lines laid on the surface

Smaller, intrastate lines can be laid on the surface of the ground/marsh/forest if the exposed line does not pose a risk to the public or violate state or federal requirements. This method can include transporting a pull rope across the surface and pulling the line from one point to another. The method of pull rope transportation can include walking, air boat and wheeled and/or tracked vehicles. The use of different types of equipment across marsh should be considered (i.e. marsh buggy versus air boat versus walking) to minimize impacts. Pushing

the line across the surface and the use of pipe bents are acceptable. If working in forested habitat, snaking the line through the trees, with minimal tree removal, should be considered in lieu of clearing a right-of-way.

3.2.2 Buried Lines

Buried lines typically are installed a minimum of 3 to 4 feet below the waterbottom surface or ground surface and can be installed using handheld or sled-mounted jets, backhoes, draglines, plows or other mechanical excavation equipment. Marsh buggy or airboat mounted equipment should be considered in lieu of larger, more impacting equipment and manpower should be considered in lieu of the use of marsh buggies and air boats. Please note that OCM does not consider open trenching an acceptable method of installation for beach crossings or barrier island crossings.

Buried lines that cross banklines and shorelines must include bankline stabilization measures at the crossing unless adequate justification for not doing so is provided to OCM. **Bankline stabilization** is the placement of erosion control material at banklines that must be cut in order to bury a line. The material used can include additional dredged material, rip rap, gravel or other material that has been pre-approved by OCM. OCM requires the use of bankline stabilization material at all bankline crossings and encourages applicants to include these measures in their project plans. If the existing bankline is not breached, bankline stabilization measures are not required.

With the abundance of lines installed within coastal Louisiana, it may be necessary to cross an existing line during installation of a new line. These **line crossings** must be done in a manner that maintains the required depth of cover over the uppermost line and may require that new lines be installed beneath existing lines. Bracing material between the lines also may be required. Excavation necessary for typical crossings should be reduced to the minimum size necessary to safely install the line. Reasonable efforts must be taken to account for all line crossings during development of a pipeline installation project. Using OCM's SONRIS GIS interactive map, all known permitted pipelines are indicated and the number of crossings can be estimated.

The **construction right-of way** (ROW) of a line is the work space on either side of the line needed to install the line safely. If trenching a line, the width of the trench should be of minimum size. Typically lines less than 12 inches in diameter can be installed in trenches six feet wide or less at the top. Larger lines will require larger rights-of-way but should be reduced to the minimum size necessary to safely install the line. Excavated material generated during trench excavation should be stockpiled adjacent to the trench temporarily and used as backfill. Trenches should be backfilled immediately following line installation. If installing the line in water, the excavated material must be marked until such time as it is returned to the excavation trench. The footprint of stockpiled excavated material should minimized to the maximum extent practicable and should be contained as much as possible in order to be available for use as backfill. Every effort should be made to work from and stockpile excavated material on the same side of the trench. Physical limitations on site, such as existing pipelines, power lines and other existing structures should be identified if affecting any aspect of the project. Soil data may be required if using soil conditions as a factor in trench and/or right-of-way width.

3.2.3 Horizontal Directional Drilling

Horizontal Directional Drilling (HDD), or boring, is a method of line installation across sensitive areas. The diameter of the line, the power of the drilling unit and the sediments through which the line will be installed all factor into the length over which a line can be drilled. Current industry standards demonstrate that lines up to 36" in diameter and/or 5,000' in length can be installed using this method. Surface disturbance from bore entry and exit workspaces and pipe backstring areas should be taken into consideration when assessing total project impacts. Bore entry and exit work spaces should be reduced to the minimum size necessary to safely install the line. Drilling in both directions from a single workspace is encouraged where possible. Backstrings should be laid on the surface or floated in open water where possible, however flotation ditches can be used if the need for such can be clearly demonstrated. Soil data may be required if using soil conditions as a limiting factor.

3.3 Alternatives Analysis

The Alternatives Analysis will be used to determine the least damaging feasible option for installation of the line. The Analysis should address both the route and the method of installation and should include all available options, or combinations of options, and the reasons for selection or elimination of each option. If access for onsite evaluation is not possible, use of aerial photography and habitat maps will suffice for estimate purposes.

3.3.1 Route

Provide a map showing the route of each alternative considered and a narrative explaining how the routes were compared and why some were eliminated. Include in the narrative a description of the habitats impacted and the estimated extent of the impacts to each habitat type for each route. If the landowner is limiting the route, provide a letter <u>from the landowner</u> stating such and explaining why the chosen route was selected. If unable to obtain a right-of-way for a less damaging route, provide documentation (letters of refusal, returned certified mail or other proof of unsuccessful attempts to contact the landowner, etc.) that demonstrates a good faith attempt to obtain the ROW.

3.3.2 Method of Installation

Provide a narrative explaining what methods of installation were considered and why they were eliminated. Include in the narrative, for each method of installation considered, a description of the habitats impacted and estimate of the extent of impacts to each habitat.

- If installing the line from the surface, include in the narrative an explanation of the need for the width of the proposed right-of-way.
- If using HDD to install the line, include in the narrative an explanation of the size of the entry and exit work areas. Site layout plans may be required in order to demonstrate the need for the size of the work areas requested.
- If soils are limiting factor, provide the relevant soil data and a narrative explaining the issue(s).
- If the landowner is limiting the method of installation, provide a letter <u>from the landowner</u> stating such and explaining why the limitation(s) is/are imposed.

- If equipment usage is an issue, include a work area layout plan and explanation of the space requirements from installation contractors.

Provide any additional documentation available to demonstrate identified limitations on the method of installation (site layout plan, description of physical limitations on site, etc.).

The overall project cost of the various available options to be considered can be a limiting factor for selection. If cost is a selection factor driving the choice of alternatives, cost comparisons (Authorizations for Expenditure, or AFEs) for all of the options considered will be required. The AFEs should include a detailed cost breakdown of the entire project for each option considered.

3.4 Justification Analysis

Because energy exploration and production has been determined to be an issue of national significance, lines which carry oil and gas exploration or production related products (including produced waters) do not require justification. Lines which deliver non-oil and gas exploration or production products such as CO^2, Sulfur, Xylene, etc. that are not related to oil and gas exploration or production require a Justification Analysis. The Justification Analysis should be a narrative that explains the need for the product being transported. The narrative should include a discussion of the existing availability of the product; how the product currently is being transported, if applicable; and current and/or projected demand for the product. If transporting a waste product from a facility, discuss the available options for disposal and why options not selected were eliminated.

4.0 Miscellaneous Line Features

Miscellaneous line features include tie-ins, meter stations, valve stations, and heater, separator and compressor platforms. Tie-ins for buried lines require some excavation in order to expose the lines to be connected. Meter stations and valve stations also require excavation in addition to a small permatized area. Platforms usually are elevated but may result in shading. Every effort should be made to locate miscellaneous line features in areas that avoid or minimize, to the maximum extent practicable, adverse impacts to coastal resources. Alternate locations must be addressed, although OCM recognizes that the range of alternatives is limited to the route of existing lines. The Alternatives Analysis should address all alternate sites that result in the least amount of adverse impacts to coastal resources and explains why less damaging sites were eliminated. The Alternatives Analysis also should address the size of the site and explain the efforts made to reduce the site to the minimum necessary size. Platforms should be made of a material and/or installed at a height that allows light to penetrate to the ground underneath the platform to reduce adverse impacts from shading.

5.0 Removal of Lines

If a line was installed under the authority of a Coastal Use Permit or other type of OCM authorization, then the line must be removed upon abandonment for the permitted use unless it can be demonstrated that removal was not required when the line was originally permitted.

For the purposes of this guide, **abandonment** is defined as a line that has been out of service for the permitted use for more than 120 days. The Coastal Use Permit program began in August of 1980. By 1988, it had become apparent that abandoned lines posed a potential hazard to fishing gear and marine traffic. In response to this potential hazard, OCM implemented a policy that required removal of lines installed in open water and those laid on the surface of the marsh. It was determined that a blanket requirement for line removal was not practical from an environmental standpoint and that removal vs. abandonment would be reviewed on a case-by-case basis. Lines installed prior to 1980 were determined to be exempt from this criteria based on the exemption given to "uses or activities lawfully commenced or established prior to the implementation of the Coastal Use Permit process" (LAC 43, Part 1, Chapter 7, Subchapter C,§723.8.a). Lines installed after 1980 but prior to the policy change in 1988 may or may not require removal depending on OCM's review of several factors.

An Alternatives Analysis is required for access to the site and the method of line removal and should address all available methods of line removal. OCM recognizes that alternatives for line removal are limited to the route on which the line was originally installed and does not expect a review of alternative routes for removal. Alternative methods for removal and access; however should be addressed and the estimated environmental impacts from each removal and access method should be investigated. Abandonment can be a potential option in this case, however, if abandonment of a line is requested, a Justification Analysis for abandonment must be provided to OCM.

5.1 Alternatives Analysis

An Alternatives Analysis for method of line removal is required and should address all available methods of line removal and should explain why each method would or would not be practicable. These methods include but are not limited to trenching, pulling and zippering. Each method is addressed separately below. Please keep in mind that, because removal is a requirement, the fact that some adverse impact may occur during removal does not eliminate automatically the need to remove a line. However, adverse coastal resource impacts resulting from access, removal or staging activities should be minimized to the maximum extent practicable. Please also note that the Louisiana Department of Wildlife and Fisheries (LDWF) typically requires removal of lines installed in oyster lease areas and oyster seed ground areas. Please check with them to determine if removal will be required. If a landowner objects to line removal, a letter from the landowner stating such and providing the reasons to leave the line in place should be provided.

5.1.1 Trenching

Trenching involves the excavation of a trench of appropriate width and length to expose the line for vertical removal. Trenching a line, including staging areas, should cause no more adverse environmental impact than installing the line. A detailed summary of estimated total project impacts by habitat type should be presented and efforts to minimize those impacts must be undertaken. A narrative should be provided that addresses work areas, staging areas, travel paths and excavated material placement along the pipeline route should be of minimum size and number necessary to safely accomplish the required activities. Whenever possible, material excavated from the trench should be deposited on the same side of the trench and within the same footprint as the access route and replaced immediately upon removal of the line.

5.1.2 Pulling

Pulling the line involves grabbing the line at one end and pulling it out of the substrate into which it was installed. This method typically involves work and staging areas at points of access to the line. Documentation demonstrating the reasons for not using this method of line removal (soil data, line condition data) must be included with the narrative.

5.1.3 Zippering

Zippering the line involves grabbing the line at one end and pulling it back onto itself out of the substrate into which it was installed. This method typically involves work and staging areas at only one end of the line and an access route along the line route for equipment travel while zippering. Documentation demonstrating the reasons for not using this method of line removal (soil data, line condition data) must be included with the narrative.

If other method(s) of line removal are used, an explanation of those methods must be included in the Alternatives Analysis.

5.2 Justification Analysis

The potential for adverse coastal resource impacts is not adequate justification for leaving a line in place. Lines installed prior to 1980 require no more justification than a statement regarding date of original installation. Lines installed after 1980 under the authority of an OCM authorization will require removal unless the OCM determines through its review that this activity should not be required. If an OCM authorization for line installation cannot be found and the line was installed after 1980, removal of the line is required.

Justification for not removing a line can be accomplished by stating the reasons for not removing the line and providing documentation to support the statement. If a line is installed in marsh or on land and the landowner(s) objects to removing the line, a letter **from each landowner** must accompany the request to abandon the line in place and should include the specific reason(s) why the landowner objects to line removal. OCM does not require removal of lines that are buried more than 5 feet below the ground, or the mudline if in water or marsh. Lines that are directionally bored typically are installed 5 feet or more below the ground or mudline and therefore usually do not require removal. If using this justification for not removing a line, depth of cover surveys, stamped by a professional engineer or land surveyor, must be provided to demonstrate the depth to which the line is installed, and substrate information should be provided to demonstrate that the line will not migrate to the surface.

For lines that require removal upon abandonment, OCM will, on a case-by-case basis, consider allowing lines to be temporarily taken out of service if there is a reasonable chance that the line will be used again in the future. A narrative explaining the reason(s) for leaving the line in place and the purpose, likelihood and timeframe of the line being reused must be presented with the request to temporarily leave a line in place. Information related to the age and condition of the line, depth of burial, movement of the line, erosion or scouring problems in the area and any permitted work performed on the line after installation should be presented in

the Justification Analysis. Be advised that an OCM authorization to temporarily leave a line in place for future use will require that the applicant agree to the following:

1. The line(s) must be cleaned and clear of contaminants which includes oil, condensate and other petroleum products as well as other chemicals or contaminants.

2. The line(s) must remain buried with the amount of cover required for new construction at that location. This requires 3 feet of cover in any waterway and greater depth for those crossing below a navigable channel or fairway.

3. Permittee must agree to remove the line(s) or portions of the line(s), at the applicant's expense, should the line(s) come to have less than 3 feet of cover or become a hindrance to navigation or fisheries or if the pipeline(s)/flowline(s) interfere with any coastal restoration and/or public works projects in the area.

4. Permittee shall maintain liability for, and shall hold the State of Louisiana harmless for, the out-of-service line(s) for as long as the line(s) remain in place.

5. Permittee will perform a depth of burial survey at two-year intervals and after named storms in which the eye passes within 150 nautical miles of the pipeline location and provide a copy of the survey data to OCM upon completion.

6. Permittee will produce and deliver to OCM a monetary instrument or surety bond in sufficient amount to remove the pipeline and maintain said instrument until such time as the line is removed.

7. Permittee will sign a binding contractual agreement with OCM agreeing to the conditions above.

6.0 Available Sources

Real estate availability information can be obtained from realtors and/or building associations in the development area. Multiple Listing Searches provide a listing of all available parcels of land that meet criteria specified by the searcher and can be performed by real estate agents and/or online. The search results will assist in identifying the availability of feasible alternatives. The following websites also may be useful sources of real estate information:

http://louisianalandsource.com/
http://www.westslopeproperties.com/land_sale/?filter=LA
http://www.landwatch.com/Louisiana_land_for_sale
http://www.landandfarm.com/
http://www.landsofamerica.com/america/?Search=region
http://www.unitedcountry.com/realestate/search-state/index.htm
http://www.farmlandsearch.com/view.aspx?sc=louisiana&p=0-8-0
http://www.wredcoland.com/Default
http://www.ldaf.state.la.us/portal/News/MarketBulletinCurrent/tabid/165/Default.aspx